

REMARKS

Reconsideration of the application is requested in view of the above amendments and the following remarks. Claim 1 has been editorially amended. No new matter has been introduced by this amendment. Claims 1-2, and 4-5 remain pending.

Claim Rejections Under 35 U.S.C. § 112

Claims 1, 2, 4, and 5 were rejected under 35 U.S.C. § 112, ¶ 2, as indefinite. Applicants respectfully traverse this rejection. Claim 1 has been amended to provide an antecedent basis for the term "plate." Accordingly, Applicants respectfully contend this rejection has been rendered moot.

Claim Rejections Under 35 U.S.C. § 102

Yoshii et al.

Claims 1, 2, 4, and 5 were rejected under 35 U.S.C. § 102 as anticipated by Yoshii et al. (U.S. Pat. No. 5,637,416). Applicants respectfully traverse this rejection.

Claim 1 requires a higher porosity in the intermediate part of the positive electrode plate than the surface parts of the electrode plate. As claimed, the plate includes both a conductive support and active material. As described in the application, pores present in the active material are also considered when determining the overall porosity of the electrode plate. (Page 4, lines 9-20; Fig. 1A). The porosity as defined in claim 1 is not the porosity of the support before active material has been added thereto. The porosity is that of the electrode plate itself after the active material has been filled in the support.

Yoshii is directed to an electrode plate for an alkaline storage battery with a substrate having a higher porosity layer and a lower porosity layer. (Col. 1, ll. 55-63). Yoshii teaches that the lower porosity layer of the substrate contains a higher percentage of metal than the higher porosity layer, and thus exhibits better conductivity. (Col. 3, lines 5-10). The increased conductivity of the electrode improves the utilization rate and the discharge capacity of the battery. (Col. 3, lines 5-10). Yoshii teaches that an active material paste is impregnated into one side of the substrate. Yoshii teaches that the active material should be applied to only the higher

porosity layer of the substrate, and not allowed to penetrate the lower porosity layer of the substrate. (Col. 4, lines 8-24). Nowhere does Yoshii discuss the porosity of the electrode *after* the active material has been deposited thereon. Thus, Yoshii addresses the porosity of the substrate, or support, and not the porosity of the electrode plate containing the active material. Moreover, since Yoshii teaches that the porosity of the substrate is varied to increase the amount of metal to improve the conductivity of the electrode, there would have been no motivation to modify the porosity of the electrode containing the active material.

In addition, the lower porosity layer of the substrate is not filled with active material. Thus, the lower porosity layer would presumably have the highest porosity after filling with the active material. The lower porosity layer is on the outer surface of the substrate, however, and not in an intermediate portion of the electrode as required by claim 1. Thus, Yoshii fails to teach an electrode plate having a higher porosity in the intermediate part than in its surface parts. For at least these reasons, Yoshii fails to anticipate claim 1.

Claims 2, 4, and 5 depend from claim 1, an allowable base claim. For at least this reason, Applicants respectfully contend Yoshii fails to anticipate these claims as well.

Matsumoto

Claims 1, 2, 4, and 5 were rejected under 35 U.S.C. § 102 as anticipated by Matsumoto et al. (U.S. Pat. No. 4,251,603). Applicants respectfully traverse this rejection.

As previously discussed, claim 1 requires a higher porosity in the intermediate part of the positive electrode plate than the surface parts of the electrode plate.

Matsumoto is directed to an electrode that can contain more active material. (Col. 2, line 68 through col. 3, line 8). Matsumoto teaches an electrode in which the sectional areas of the metal matrix plaque, or support, continuously decrease from the surface of the matrix toward the center of the matrix. (Matsumoto, col. 3, ll. 58-67). In other words, the amount of empty space in the un-impregnated matrix decreases towards the center of the matrix. This allows the matrix to hold more overall active material while maintaining the strength necessary for the matrix to be used in a battery. (Col. 2, line 68 - col. 3, line 10). Thus, the center of the matrix in Matsumoto

acts as a spine for the electrode. However, once the active material is added to the metal matrix, the porosity of the electrode plate is uniform. (Col. 3, lines 5-7).

The Examiner asserts Matsumoto "states that the porosity of the electrode is higher within the electrode than on outer portions thereof." (citing col. 5, lines 27-31; col. 6, lines 38-46). These sections of Matsumoto do not state the proposition asserted by the Examiner. These portions of Matsumoto teach that the un-impregnated plaque has a higher overall porosity when the sectional areas of the metal matrix plaque continuously decrease from the surface of the matrix toward the center of the matrix. With this specific structure, the plaque is capable of holding more active material. This interpretation is more consistent with the remainder of Matsumoto, which is aimed at increasing the amount of active material in the electrode while maintaining sufficient strength of the electrode. (Col. 5, lines 7-16). There is no reason to read the cited portions of Matsumoto as indicated in the Office Action. Matsumoto fails to provide any motivation to have an increased porosity at the center of the electrode, and there is no reason to read these sections as requiring the impregnated matrix to have a higher porosity in its intermediate part. For at least these reasons, Applicants respectfully contend Matsumoto fails to anticipate claim 1.

Claims 2, 4, and 5 depend from claim 1, an allowable base claim. For at least this reason, Applicants respectfully contend Matsumoto fails to anticipate these claims as well.

In view of the above, Applicants respectfully request reconsideration of the application in the form of a Notice of Allowance.



Date: May 24, 2004

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

By: [Signature]
Douglas P. Mueller
Reg. No.: 30,300
DPM/TSW